TURBOSYNTH SC

2.2 Manual Addendum

digidesign

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Turbosynth SC 2.2 Manual Addendum

Welcome to Turbosynth SC! This upgrade offers several new features and many enhancements to existing ones including integrated SampleCell II support, more playback options, new modules, stereo capabilities, and more. Please take the time to read this Addendum to become familiar with all these additions. Here's what you'll find in the Turbosynth SC 2.2 Manual Addendum:

- *Section 1: Getting Started* gives you an introduction to Turbosynth SC, and tells you what you'll need to use Turbosynth SC, how to install it, and how to configure it on your Macintosh.
- *Section 2: What's New* lists the features that have been added since version 2.0.
- *Section 3: What has Changed* lists all other changes to Turbosynth SC since version 2.0.
- *Section 4: Using SampleCell II with Turbosynth SC* explains Turbo's SampleCell II support and shows what a potent combination these two applications can be.

Section 1: Getting Started

What is Turbosynth SC? Turbosynth SC is software that allows you to create and manipulate sounds for Digidesign's SampleCell™, Pro Tools™, Sound Tools™ and Audiomedia™ digital recording and editing systems. Turbosynth SC uses a "modular" approach to synthesis, by providing a variety of modules such as oscillators, filters, and waveshapers to create and modify sounds. This approach to synthesis has been used since the earliest days of electronic music, when analog synthesizers were programmed using patch cords. While this type of modular synthesis provided complete flexibility — modules could be patched in any configuration, allowing the user to literally "design" any imaginable synthesizer architecture — patch cords were clumsy to use and patches couldn't be stored in computer memory.

Turbosynth SC combines the flexibility of modular synthesis with the power and convenience of modern digital synthesis, sampling, sound processing and hard disk storage technology. This combination allows you to draw on the strengths of each sound producing method to produce the widest possible range of sounds. Once created, these sounds can be opened in SampleCell or one of Digidesign's digital recording systems and played back via MIDI or from a "playlist."

What You'll Need

In order to use Turbosynth SC, the following is required:

- System 7.0 or later, in 32-bit mode, with a minimum of 5 Megabytes of RAM. While Turbosynth SC will operate with as little as 2 Megabytes of available RAM, we strongly recommend 8 Megabytes to take full advantage of Turbosynth SC, as well as to be able to use some of the larger Example files.

Optional (but highly recommended) equipment includes:

- A SampleCell playback card, or any Digidesign DSP card (AudioMedia II, AudioMedia LC, Pro Tools, Sound Tools, etc.). A SampleCell card will provide 16-bit playback fidelity, and a DSP card will provide high-fidelity output and direct sampling input.

NOTE: Without a SampleCell or DSP card you will not be able to use Turbosynth SC's Diffuser module. If you open Turbosynth documents which already contain a Diffuser, the signal will automatically pass through the module (as if it was in a "bypass" mode).

Installing the Turbosynth SC Software

This section shows you how to install Turbosynth SC on your hard disk. We strongly recommend you carefully follow the steps outlined below. In other words, this is not the time to exercise your creativity — you'll have plenty of time for that later, after you've correctly installed and authorized your copy of Turbosynth SC. Turbosynth SC allows you to authorize up to three hard disks for Turbo-use.

Important

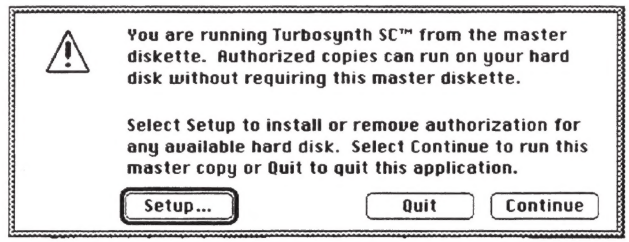
We know, copy protection can be an inconvenience. However, the installation procedure you'll follow with Turbosynth SC is fast, flexible and does not require a serial number. As long as you hold onto your master disk and follow the instructions in this section you should be able to use Turbosynth SC without a hitch.

Please, do NOT run Turbosynth SC directly from the floppy disk. (Floppy drives are too slow for Turbosynth SC.)

To install Turbosynth SC on your hard disk:

- Insert the *Turbosynth SC Master* Disk into any floppy drive.

- Double-click the *Turbosynth SC* icon. The following dialog box appears:

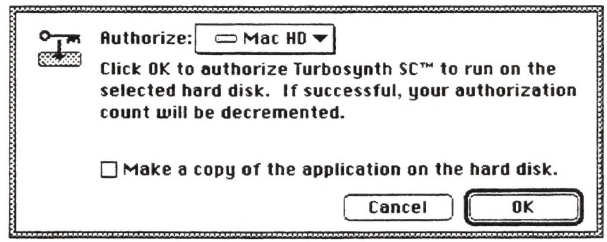

You are running Turbosynth SC™ from the master diskette. Authorized copies can run on your hard disk without requiring this master diskette.
Select Setup to install or remove authorization for any available hard disk. Select Continue to run this master copy or Quit to quit this application.
Setup...
Quit
Continue

- Click *Setup*. If you click *Continue*, you will still be able to install Turbosynth SC, but you will not have *authorized* your hard disk. If you install Turbosynth SC without authorizing your hard disk you will be required to insert the master disk each time you start up the program. Therefore, don't click *Continue* unless you need to somehow limit access to your installed copy of Turbosynth SC.

  After you click *Setup*, the following dialog box appears:

Turbosynth SC™ will run on any authorized hard disk without requiring the master diskette. You have a remaining authorization count of 3.
Select Authorize to install authorization to a hard disk or Deauthorize to remove authorization. Select Quit to quit.
Authorize
Deauthorize
Quit

- Click *Authorize*. The next dialog that appears lets you do two things: specify which hard drive will be authorized for Turbosynth SC, and copy the application to the authorized drive.


Authorize:
Mac HD
Click OK to authorize Turbosynth SC™ to run on the selected hard disk. If successful, your authorization count will be decremented.
Make a copy of the application on the hard disk.
Cancel
OK

- Select the hard disk on which you want to install Turbosynth SC using the pop-up list (in the example above, "Mac HD" is selected).

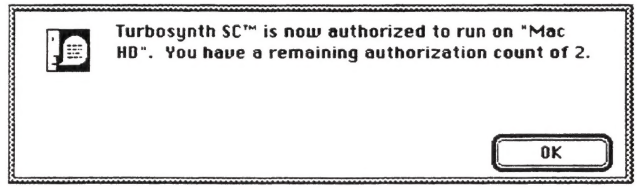
- Check *Make a copy of the application on the hard disk...* If you do not check this checkbox, the selected hard disk will still be authorized, but you'll have to manually drag-copy the application from the floppy disk later.

- Click *OK*.

A standard Macintosh file dialog box appears asking you to indicate where on the selected and authorized hard disk you want Turbosynth SC to be installed. (We suggest you create a new "Turbo" folder (by clicking the *New Folder* button) before installing the application). Do NOT rename the application.

- Choose the location for Turbosynth SC and click *Save*.

You'll now see a couple of dialogs go by as the installer first authorizes your hard disk, then copies the application from the floppy. When these two processes finish, this dialog appears:



This dialog box confirms that your hard disk is now authorized to run Turbosynth SC, and tells you how many more authorizations your disk has left (in the example above, the disk has a remaining authorization count of 2).

- Click *OK*. The following dialog appears again:

Turbosynth SC™ will run on any authorized hard disk without requiring the master diskette. You have a remaining authorization count of 2.
Select Authorize to install authorization to a hard disk or Deauthorize to remove authorization. Select Quit to quit.
Authorize
Deauthorize
Quit

- Click *Quit* and, when you return to the Finder, eject the Turbosynth SC Master disk.

  To learn how to "Deauthorize" your hard disk, see the following section *"Deauthorizing your hard disk."*

This completes the installation and authorization of Turbosynth SC. You can now complete the procedure by installing the supporting files from the Turbosynth SC Miscellaneous Files floppy disk.

You are now ready to start using Turbosynth SC! One more thing though, before you get engrossed in Waveshaping, Spectral Inverting and Diffusing — send in your Registration card! This will guarantee that you're kept up-to-date with news from us about upgrades to Turbosynth SC and other Digidesign audio production tools.

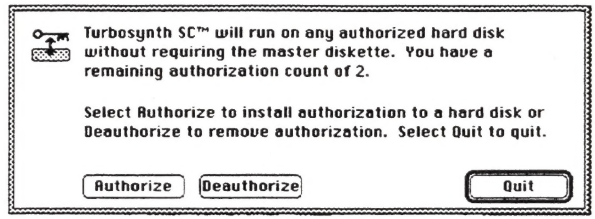
About Deauthorizing Your Hard Disk

On an *Authorized* hard disk, you can start up, use, and even move Turbosynth SC around without ever being prompted for your master disk. If you use up your three authorizations (reinstalling Turbosynth SC after a hard disk crash, etc.), no additional authorizations can occur until you "reclaim" an authorization by using the *Deauthorization* feature of the Turbosynth SC installer.

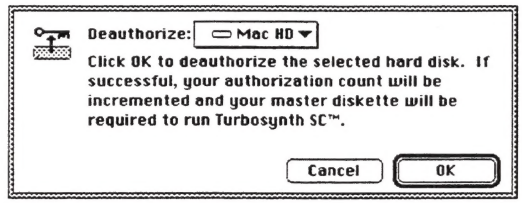
To Deauthorize your hard disk:

- Insert the *Turbosynth SC Master* disk into any floppy drive connected to the hard disk that you want to deauthorize.
- Double-click on the floppy disk icon to open it.
- Double-click on the *Turbosynth SC* on the master disk to launch the installer.

- At the first dialog box, click *Setup*. The following dialog appears:

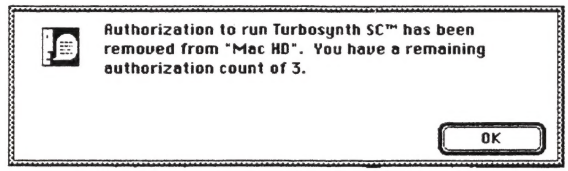

Turbosynth SC™ will run on any authorized hard disk without requiring the master diskette. You have a remaining authorization count of 2.
Select Authorize to install authorization to a hard disk or Deauthorize to remove authorization. Select Quit to quit.
Authorize
Deauthorize
Quit

- Click *Deauthorize*. Next, this dialog box appears:


Deauthorize:
Mac HD
Click OK to deauthorize the selected hard disk. If successful, your authorization count will be incremented and your master diskette will be required to run Turbosynth SC™.
Cancel
OK

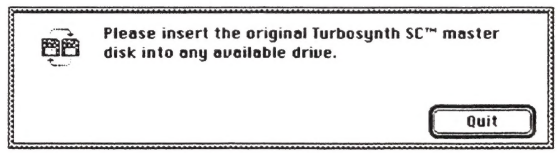
- Make sure the appropriate hard disk is selected (use the pop-up menu to select a different disk, if necessary) and click *OK*.

  A message box will appear briefly while deauthorization takes place, after which a dialog appears confirming that you have reclaimed one authorization.



- Click *OK*. When the next dialog box appears (the "Authorize/Deauthorize" dialog), click *Quit* to return to the Finder.

Deauthorization is now complete. If you now launch Turbosynth SC (assuming you left a copy on your hard disk) you will see the following dialog box *every time* you start the application:



Simply insert the master disk and Turbosynth SC will launch.

If you have not already done so, be sure to open and read the *Read Me!* file on your *Misc Files* disk. The Misc Files disk contains a few system utilities which your computer might need — the Read Me! will tell you whether or not you need any of these files. If you have any problems or questions about installing, authorizing or deauthorizing Turbosynth SC, try repeating the steps listed above. If you have tried and still have problems, call Digidesign Technical Support at (415) 688-0744

Audio Connections

The ideal audio configuration for Turbosynth SC is to use Digidesign's 32-voice, 32 Megabyte SampleCell II sample playback system for audio playback. Turbosynth SC can also play audio through any Digidesign DSP card (Pro Tools, Sound Tools, Audiomedia, etc.). If you do not have either of these, you can use the Macintosh internal speaker to hear your sounds.

If you plan to use SampleCell or another Digidesign DSP card, connect your card's audio outputs to your mixer and/or other audio gear. Turbosynth SC files can be either mono or stereo, so be sure you use two outputs of your audio card for true stereo playback.

This completes the basic installation process. You are now ready to start using Turbosynth SC.

Section 2: What's New

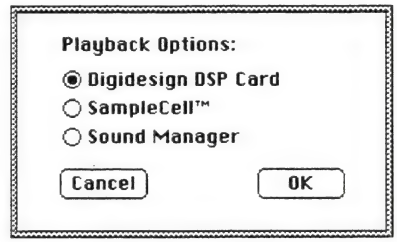
This section tells you what new features you will find in Turbosynth SC. Features added since version 2.0 are included for those of you who have not upgraded to version 2.1.

Copy Protection

This one should be obvious if you just completed the installation instructions. You must have a Turbosynth Master disk to start-up Turbosynth SC. The installation instructions contain everything you'll need to know about Turbosynth SC 2.2's copy protection.

Playback Options

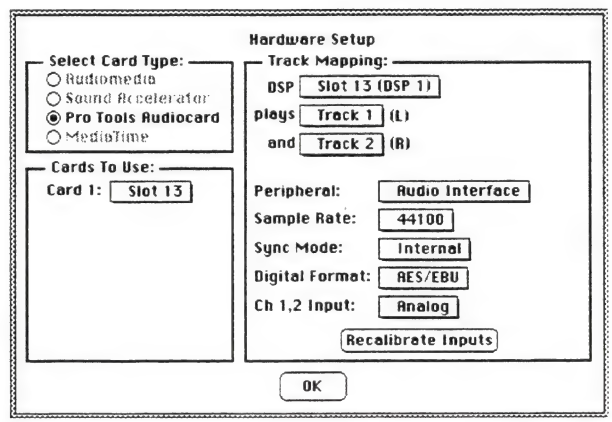
Turbosynth SC is compatible with all of Digidesign's DSP cards (Pro Tools, Sound Tools II, Audiomedia II). There are two new Options menu commands, *Playback Options* and *Hardware Setup*, which you use to configure playback for Turbosynth SC. *Playback Options* lets you choose one of three possible playback configurations — a Digidesign DSP card, SampleCell, or Sound Manager.



The Playback Options dialog

In the Playback Options dialog:

- Choose *Digidesign DSP Card* if you have a Pro Tools, Sound Tools II or Audiomedia II card. Next, open the *Hardware Setup* dialog and configure the settings appropriately (i.e., make sure the proper card and slot are selected, and that the digital/analog input is set to the desired status).



The Hardware Setup dialog

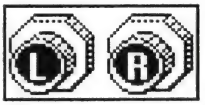
Stereo Documents and Stereo Sampling

Turbosynth SC reads and writes Sound Designer II and AIFF files in mono or stereo.

A stereo sample module is represented by two modules representing each channel. Both modules are linked together so that any changes or edits in one module affect both modules. When selecting one of these modules the other is also selected. You can unlink them using the *Convert Stereo Sample to Dual Mono* command in the Edit menu.

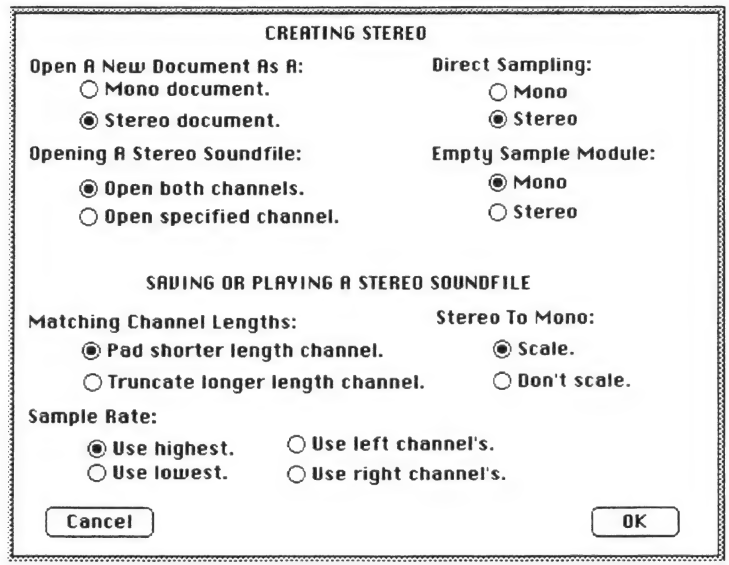
A Stereo Sample

If the document is stereo there will be two output jacks. The two output modules will share the same loop markers, unless there is no sound data in one of the outputs. Because each output's sound buffer length can be different, a loop is constrained by the shorter of the two lengths. Also, reducing the length of one output's sound buffer may cause a deletion of loop markers for both outputs if the marker is beyond the new length of the sound buffer. Unlike the stereo sample modules, crossfade looping is done explicitly for each output module.



A Stereo Output Module

In the Options menu you will find the *Stereo Preferences* command. This command opens the *Creating Stereo* dialog box, which lets you set various preferences for creating, saving and playing stereo files in Turbosynth SC:



Stereo Preferences "Creating Stereo" dialog

- *Open A New Document As A.* Sets the default for new documents to be Mono or Stereo. When set to Mono Document, all new Turbosynth documents will have a mono output jack. When Stereo Document is selected, all new Turbosynth documents will have a stereo output jack.

- *Open a Stereo Sound file.* With *Open both channels* checked, Turbosynth will automatically load both channels of a stereo sound file. With *Open specified channel* checked, Turbosynth will ask you to specify which channel (*right* or *left)* to load.

- *Direct Sampling.* Sets the default for mono or stereo direct sampling.

- *Empty Sample Module.* Sets the default type (stereo or mono) for new Sample modules.

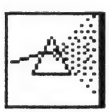
- *Matching Channel Length.* Sets how you want channels of differing length "matched" in stereo files, by lengthening the shorter of the two (*Pad shorter length channel)* or shortening the longer of the two (*Truncate longer length channel*).

- *Stereo to Mono.* Sets the default for whether or not Turbosynth scales a soundfile when saving a Stereo output as a mono file, or when playing back through Sound Manager.

- *Sample Rate.* Let's you set how Turbosynth resolves sample rate differences between the two output channels. Choices include *Use highest, Use lowest, Use left channel's* and *Use right channel's.*

Memory Indicator

The main window's info icon (in the tool palette) is now used as a memory indicator. It fills with black from the bottom up as memory is used. In extremely low memory situations, the word *Lo!* will appear at the top of the icon. When this occurs, try the following two things: open the Info Box and click the *Compact Memory* and/or *Release Clipboard* button, or increase Turbosynth SC's Finder memory allocation.

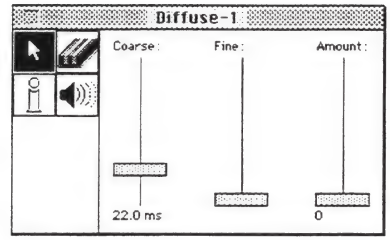


Diffuser Module

The *Diffuser* accepts one input and provides the ability to "smear" a signal over time. The Diffuser can be thought of as a fundamental building block of reverb.

Important

The Diffuser module performs extremely complex math-intensive operations. For this reason, you must have a Digidesign card such as a Pro Tools, Sound Tools, Audiomedia or SampleCell card installed in your Macintosh in order to use this module. If there is no such card physically installed in your CPU, the Diffuser icon will be disabled.



The Diffuser

The *Coarse* and *Fine* sliders control the amount of diffusion, or "smearing." The *Amount* slider controls the relative level of diffused signal to dry signal. 0% results in no audible effect, 100% results in full effect.

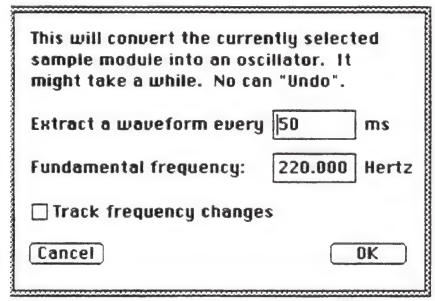
Convert to Oscillator

In addition to the *Convert to Waveform* command, Turbosynth SC offers a unique capability to convert an entire sample into an oscillator.

To convert a sample into an oscillator:

- Select the sample module in the work area of the Main Window.
- Choose *Convert to oscillator* from the *Edit* menu.

The following dialog box appears:


This will convert the currently selected sample module into an oscillator. It might take a while. No can "Undo".
Extract a waveform every 50 ms
Fundamental frequency: 220.000 Hertz
Track frequency changes
Cancel
OK

Convert to oscillator dialog box

"Extract a waveform every" will tell Turbosynth SC how many waveforms you want the sample broken into. The higher the number you enter here, the more closely the resulting oscillator will resemble the original sample. The lower the number you enter, the less recognizable the result. Experiment with different extraction values to find what works best for you.

The *Fundamental Frequency* is the fundamental pitch the oscillator will sound. Change this value to change the pitch of the sound before it is converted to an oscillator.

Track frequency changes lets Turbosynth SC create multiple waveforms with differing fundamental frequencies when converting complex samples into oscillators. Leave this option off to get an oscillator that doesn't deviate from its fundamental frequency.

- Set the parameters in the dialog box as appropriate and click *OK*.

This operation can take a few moments. When conversion is finished, your screen will return to the Main Window, and the module which you just converted will appear as a waveform icon.

Windows menu

A *Windows* menu has been added. This menu lists all currently open Turbosynth SC document and/or module windows. Choosing an item from the Windows menu makes that window the "topmost" (i.e., active) window.

Monitor Loop at Output

Located in the *Parameter Manager* dialog box (accessed via the Options menu), the checkbox *Monitor Loop at Output* provides some flexibility for listening to looped Turbo sounds. When checked, you can use the normal play functions (space bar, clicking the speaker) from the main window and hear the loop (if you have set loop start and stop points). If unchecked, you will only be able to hear the loop from within the Loop Window.

Section 3: What has Changed?

The following are some of the more significant changes that have been made to Turbosynth SC since version 2.0. Consult the Turbosynth SC 2.2 *Read Me!* document for any additional changes.

- *Mac- Sampler, Sampler- Mac* commands are no longer supported.
- The *Tab* key of your computer keyboard toggles between the Arrow, Patch Cord and Eraser tools.
- The File menu command *Save Output as soundfile* has been replaced by the two commands *Save Output*, and *Save Output As*. These two commands function similarly to the familiar Save and Save As commands of many Macintosh applications, and have specific uses when using Turbosynth SC with SampleCell II. Refer to Section 4 for more information.
- *Select All* now works in the Oscillator window (to select all waveforms) and in the Sample Module (to select the entire sample) as well as in the main window. Previously, Select All only worked to select all modules placed in the work area.

Section 4: Using SampleCell II with Turbosynth SC

Introduction

If you already use SampleCell, chances are good that at some point you have used Sound Designer II SC™ to modify a sample you're using in a SampleCell Instrument. If you are new to SampleCell, or have never used Sound Designer II SC in this fashion, suffice it to say that switching between these two applications is so easy it makes Sound Designer II SC and SampleCell work almost as if they were two windows of a single application.

In a somewhat similar fashion, Turbosynth SC can be used as a sound editing extension of SampleCell. The way it works is like this: come up with a sound in Turbosynth SC, turn on *Auto Update SampleCell*, and then save your Turbosynth SC sound as an Output file. SampleCell will automatically create a new Multi-Sample Instrument and load the sound in the output file into it. If your Turbosynth SC sound is a stereo sound, SampleCell will create a Stereo Multi-Sample Instrument, automatically!

If you want to continue creating new Instruments, simply *Save Output As* (to save a different version of the Turbosynth SC sound). SampleCell will load each output file as a new Instrument.

Once an Output file is in an Instrument it can be modified in Turbosynth SC, and automatically updated in SampleCell II, by doing a *Save Output*. This updates the saved-to-disk Output file, and SampleCell then updates itself with this new version of the file.

For multi-sampling, the process is slightly different due to the fact that the goal is to create *Multi-Sample Instruments* rather than single-sample instruments. Refer to the section *Working with Multi-Sample Instruments* later in this appendix for more information.

Before you begin

- Make sure your SampleCell card(s) are installed correctly and operating properly.

- This section assumes you have a working knowledge of SampleCell, and are familiar with SampleCell Instruments, Banks, Keygroups, Velocity Zones, etc. If you are not familiar with these terms, you might end up a bit confused by this section. You must understand the basic operation of SampleCell before proceeding.

You're ready to start hearing what you can do using the combination of Turbosynth SC and SampleCell!

Getting Started

Setting up the link between Turbosynth SC and SampleCell is easy. Here's how to get the pair working together quickly:

To setup Turbosynth SC and SampleCell links:

- Open Turbosynth SC and open a sound or create a sound from scratch. This will be the first sound of your SampleCell Instrument.

- Once you've got your sound, choose *Auto Update SampleCell* from the *Options* menu. This "turns on" the link between the two applications.

- Choose *Save Output* from the *File* menu of Turbosynth SC. A Macintosh save file dialog appears. Name the output file, select a destination folder and indicate the desired file format (Sound Designer II, Sound Designer, or AIFF).

When the output file is saved, SampleCell automatically loads it into a new multi-sample instrument (SampleCell will automatically launch, if it is not already running.) If you want, switch to SampleCell and adjust instrument parameters, or remain in Turbosynth to further edit the sound:

To edit the sound in Turbosynth SC after it is in SampleCell:

- Modify the sound.

- Choose *Save Output* from the *File* menu. Just like the familiar Save command found in word-processors, this command updates the earlier output file with the modifications you have just made. At this point, *Auto Update SampleCell* tells SampleCell to load this newest version of the sound, replacing the original but retaining its keygroup, velocity zone, or other SampleCell parameters. Remember, if you do *Save Output As*, SampleCell will create a whole new single-sample instrument with the new output file instead of updating the existing one.

Working with Multi-Sample Instruments

You can take advantage of Auto Update SampleCell with multi-sample instruments as well. Here's how you should go about creating, and then working with, an instrument containing multiple Turbosynth SC sounds:

To use multiple Turbosynth SC sounds in one multi-sample instrument:

- In Turbosynth SC, turn OFF *Auto Update SampleCell.*
- Open your first sound and modify it, if necessary. (Be sure to play the sound so that the signal is present at the Output module.)
- Choose *Save Output* from the *File* menu. Name the output file and indicate a location for it.
- Continue in this manner, opening other sounds or modifying your first sound, and use the *Save Output As* command to save each variation until you have enough raw sounds to use in SampleCell (how many is "enough" is completely up to you).
- Next, launch SampleCell and create a new, Multi-Sample Instrument. (When you're ready to be a power user, turn Auto Update SampleCell back on before saving your last output file. As described earlier, this will launch SampleCell, create a multi-sample instrument, and load this output file automatically. You would then move to SampleCell and continue as described below.)
- Open the *Sample Map* window for your new Instrument and click the *New Keygroup* button. SampleCell's *Select a file to open* dialog appears.
- Locate and load the output file(s) you just created in Turbosynth SC as your first keygroup, then continue adding new keygroups or velocity zones as described in your SampleCell User's Guide. Adjust the keygroup and velocity zone boundaries as you normally would, and, if you like, audition them with your MIDI controller.

You should now have the basic elements of your Instrument in place. It is likely, however, that you will want to edit your sounds further after hearing them in your instrument. Here's how you can take advantage of Auto Update SampleCell for this:

To edit multi-sample instruments:

- First, save the Instrument (and the Bank), but do not close or quit SampleCell.
- With SampleCell still running, and with your new Instrument still loaded, switch back to Turbosynth SC.
- In Turbosynth SC, choose *Auto Update SampleCell* from the *Options* menu.
- Open and modify the sounds as needed, and save the new versions using the *Save Output* command. As described earlier, SampleCell will automatically update itself with these new versions of your sounds.

That covers the basics of using Turbosynth SC with SampleCell. There are, however, several *Preference* settings within SampleCell which can speed up a few of the above tasks. These options include:

- *Make One Instrument when multiple sound files are dragged onto the editor.* As a shortcut to launch SampleCell II you can drag and drop individual or multiple sound files onto the SampleCell Editor application. When a single sound file is dropped on the Editor, SampleCell will automatically create a single-sample instrument with that sound as it launches (no need to click *Load*, then locate and open the individual sample). When you drop multiple sound files (perhaps a folder of 5 or 6 Turbosynth Output files) SampleCell will create that number of single-sample instruments, *unless* this Preference is On. When On, SampleCell will load all the dragged-and-dropped sound files into a single, *multi-sample* instrument automatically.
- *Default new single sample instruments to Key Track OFF.* This Preference tells SampleCell to keep Key Track Off for all new single-sample instruments. Having key track off is often desirable for sound effects or other instances where pitch is irrelevant. Generally, if you have a sound in Turbosynth SC that you want to hear transposed across the entire keyboard, you would probably not want to have this Preference On.

- *Automatically remap Instruments in a bank after adding an instrument.* This command spreads all existing instruments in the current bank over a 5 octave range (i.e. sets hi/lo MIDI notes), and sets the first samples base note to the center of the range. For example, if you have 5 instruments open, the leftmost instrument will be mapped from C0 to B2 with its root note set to F#2. Moving to the right, the next instrument will be mapped from C3 to B3 with a root note of F#3, and so on.

By configuring these Preferences to match your work habits, your Turbosynth SC/ SampleCell system can be optimized for maximum efficiency.

Don't forget, if you have a Digidesign DSP card (Pro Tools, Sound Tools or AudioMedia) and the requisite audio interface, you can direct-sample into Turbosynth's Sample module as a way to collect raw samples for your system.